IN THE CLAIMS:

Please amend the claims as follows:

1. (Previously presented) A method of producing a polymer-clay nanocomposite, comprising the steps of:

providing a polymer-clay mixture comprising a polymer and clay;

exfoliating the clay through solid-state shear pulverization in the presence of cooling sufficient to maintain the mixture in the solid state during the pulverization; and

discharging the mixture as a polymer-clay nanocomposite containing the exfoliated clay.

2. (Canceled)

3. (Previously presented) The method of claim 1, wherein the mixture comprises at least about 3 wt% organoclay.

4. (Previously presented) The method of claim 1, wherein the mixture comprises about 10 wt% organoclay.

5. (Previously presented) The method of claim 3, wherein the organoclay contains between about 40-50 wt% clay and between about 50-60 wt% organic content.

6. (Original) The method of claim 5, wherein the organoclay is a montmorillonite.

7. (Original) The method of claim 1, wherein the polymer-clay mixture comprises a polymer selected from the group consisting of polypropylene, polyolefins, polystyrene, polymethacrylates, poly(ethylene-co-vinyl acetate), polyhydroxystyrene, poly (vinyl pyridine), polyvinylalcohol, polyacrylamide, polycaprolactone, copolymers of ethylene, copolymers of propylene, copolymers of acetate, poly (ethylene terephthalate), nylon, and blends thereof.

8. (Previously presented) The method of claim 1, further comprising a step of cooling a pulverizer barrel with a chilled fluid to about 10° Celsius during the pulverization.

9-17. (Canceled)

18. (Previously presented) The method of claim 1, wherein the clay comprises an organoclay, and wherein the polymer comprises a nonpolar polymer.

19. (Previously presented) A method of producing a polymer-clay nanocomposite, comprising the steps of:

melt extruding a polymer-clay mixture comprising a polymer and clay;

exfoliating the clay through solid-state shear pulverization in the presence of cooling sufficient to maintain the mixture in the solid state during the pulverization; and

discharging the mixture as a polymer-clay nanocomposite containing the exfoliated clay.

20. (Previously presented) The method of claim 19, wherein the mixture comprises at least about 3 wt% organoclay.

21. (Previously presented) The method of claim 19, wherein the mixture comprises about 10 wt% organoclay.

22. (Previously presented) The method of claim 20, wherein the organoclay contains between about 40-50 wt% clay and between about 50-60 wt% organic content.

23. (Previously presented) The method of claim 22, wherein the organoclay is a montmorillonite.

24. (Previously presented) The method of claim 19, wherein the polymer-clay mixture comprises a polymer selected from the group consisting of polypropylene, polyolefins, polystyrene, polymethacrylates, poly(ethylene-co-vinyl acetate), polyhydroxystyrene, poly (vinyl pyridine), polyvinylalcohol, polyacrylamide, polycaprolactone, copolymers of ethylene, copolymers of propylene, copolymers of acetate, poly (ethylene terephthalate), nylon, and blends thereof.

25. (Previously presented) The method of claim 19, further comprising a step of cooling a pulverizer barrel with a chilled fluid to about 10° Celsius during the pulverization.

26. (Previously presented) The method of claim 19, wherein the clay comprises an organoclay, and wherein the polymer comprises a nonpolar polymer.

27. (New) The method of claim 1, wherein said exfoliating comprises subjecting the clay to the solid-state shear pulverization in a twin-screw pulverizer.

28. (New) The method of claim 19, wherein said exfoliating comprises subjecting the clay to the solid-state shear pulverization in a twin-screw pulverizer.